COASTAL FISH AND WILDLIFE RATING FORM

Name of area: **Kingston- Poughkeepsie Deepwater**
Designated: **August 15, 2012**
County: **Ulster; Dutchess; Orange**
Town(s): **Rhinebeck, Hyde Park, Poughkeepsie, Wappinger, Kingston, Esopus, Lloyd, Marlborough, Newburgh**
7.5' Quadrangles: **Kingston East, NY; Hyde Park, NY; Poughkeepsie, NY; Wappingers Falls, NY**

Assessment Criteria	**Score**
Ecosystem Rarity (ER) -- the uniqueness of the plant and animal community in the area and the physical, structural and chemical features supporting this community.	
ER Assessment - An extensive area of deep, freshwater, estuarine habitat; rare in New York State; but somewhat common in the Hudson River. Geometric mean √64 x √25=40	**40**
Species Vulnerability (SV) – the degree of vulnerability throughout its range in New York State of a species residing in the ecosystem or utilizing the ecosystem for its survival.	
SV Assessment – Shortnose sturgeon (E) wintering area and a habitat also used by Atlantic sturgeon (E). Additive division: 36 + 36/2 = 54	**54**
Human Use (HU) -- the conduct of significant, demonstrable commercial, recreational, or educational wildlife-related human use, either consumptive or non-consumptive, in the area or directly dependent upon the area.	
HU Assessment – Striped bass production in this area supports commercial and recreational fisheries in the State of New York.	**16**
Population Level (PL) – the concentration of a species in the area during its normal, recurring period of occurrence, regardless of the length of that period of occurrence.	
PL Assessment -- Concentrations of sturgeon and other estuarine species are unusual in New York State.	**16**
Replaceability (R) – ability to replace the area, either on or off site, with an equivalent replacement for the same fish and wildlife and uses of those same fish and wildlife, for the same users of those fish and wildlife.	
R Assessment – Irreplaceable	**1.2**
Habitat Index (ER+SV+HU+PL)= 126	**Significance (HI x R)= 151.2**

LOCATION AND DESCRIPTION OF HABITAT

Kingston-Poughkeepsie Deepwater Habitat is an approximately 6,350 acre habitat that encompasses a 25 mile stretch of the Hudson River extending approximately from Kingston Point in the City of Kingston in Ulster County and the Village of Rhinecliff in Dutchess County to just south of Wappinger Creek in the Town of Wappinger in Dutchess County. The area is located in the Towns of Rhinebeck, Hyde Park, Poughkeepsie and Wappinger in Dutchess County, the Towns of Esopus, Lloyd, and Marlborough and the City of Kingston in Ulster County, and the Town of Newburgh in Orange County (7.5' Quadrangle: Kingston East, N.Y., Hyde Park, N.Y., Poughkeepsie, N.Y., and Wappingers Falls, N.Y.).

The significant habitat area is a nearly continuous deepwater section of the river ranging in water depth from 20 feet to 50 feet or greater, including a small area near Crum Elbow that exceeds 125 feet in depth.

FISH AND WILDLIFE VALUES

The Kingston-Poughkeepsie Deepwater Habitat is an extensive section of deepwater habitat in the Hudson River. Deepwater areas provide wintering habitat for shortnose sturgeon (*Acipenser brevirostrum)* (E) and Atlantic sturgeon (*Acipenser oxyrhynchus*) (E) , and support a diversity of freshwater and migratory species in the Hudson River. Fish species found in this section of river include fourspine stickleback (*Apeltes quadracus*), hogchoker (*Trinectes maculatus*), killifish (*Fundulus diaphanous*), threespine stickleback (*Gasterosteus aculeatus*), white perch (*Morone americana*), bluegill (*Lepomis macrochirus*), brown bullhead (*Ameiurus nebulosus*), common carp (*Cyprinus carpio*), golden shiner (*Notemigonus crysoleucas*), largemouth bass (*Micropterus salmoides*), pumpkinseed (*Lepomis gibbosus*), smallmouth bass (*Micropterus dolomieui*), spottail shiner (*Notropis hudsonius*), white catfish (*Ameiurus catus*), yellow perch (*Perca flavescens*), alewife (*Alosa pseudoharengus*) , American eel (*Anguilla rostrata*), American shad (*Alosa sapidissima*), blueback herring (*Alosa aestivalis*), and striped bass (*Morone saxatilis*).

The Kingston-Poughkeepsie Deepwater Habitat is one of the largest and most well known spawning areas for Atlantic sturgeon (E) and overwintering areas for shortnose sturgeon (E) in the Hudson River. Although habitat requirements of both sturgeon species are still being studied, it is believed that these deepwater areas may be critical year round. Yolk-sac larvae, suspected to be Atlantic sturgeon (E), have been collected from this region at depths of 45 feet to 120 feet. Mature Atlantic sturgeon have been routinely captured in deep water on both sides of the river near the middle and near the southern end of the habitat area. Spawning also occurs in deep water along the southern east shore of the river. Shortnose sturgeon (E) use the portion of the river that generally is greater than 30 feet in depth. The majority of both Atlantic sturgeon (E) and shortnose sturgeon (E) taken for age-growth analysis during the biological survey in the 1930s came from within this habitat near Rhinecliff and Port Ewen. The Kingston-Poughkeepsie Deepwater Habitat also encompasses the reach of highest mean striped bass egg density from 1974-2006. Striped bass spawning over deepwater has been observed in this reach of the river.

The Kingston-Poughkeepsie Deepwater is a critical habitat for most estuarine-dependent fisheries originating from the Hudson River. This area contributes directly to the production of in-river and ocean populations of food, game, and forage fish species. Consequently, commercial and recreational fisheries throughout the North Atlantic benefit from these biological inputs from the Hudson River estuary.

The area provides habitat for blue crab (*Callinectes sapidus*) and concentrations of waterfowl such as American black duck (*Anas rubripes*), blue-winged teal (*Anas discors*), common goldeneye (*Bucephala clangula*), common merganser (*Mergus merganser*), gadwall (*Anas strepera*), greater scaup (*Aythya marila*), green-winged teal (*Anas crecca*), hooded merganser (*Lophodytes cucullatus*), lesser scaup

(*Aythya affinis*), mallard (*Anas platyrhynchos*), northern pintail (*Anas acuta*), red-breasted merganser (*Mergus serrator*), and wood duck (*Aix sponsa*).

IMPACT ASSESSMENT

Any activity that would substantially degrade water quality, increase turbidity or sedimentation, alter flows, salinity, or temperature, reduce water depths, or degrade or alter benthic communities in Kingston-Poughkeepsie Deepwater would result in significant impairment of the habitat. All species may be affected by water pollution, such as chemical contamination (including food chain effects resulting from bioaccumulation), oil spills, excessive turbidity or sediment loading, nonpoint source runoff, and waste disposal (including vessel wastes). Discharges or runoff of sewage effluent, pesticides, or other hazardous materials into the river may result in adverse impacts on the habitat area.

Any physical alteration of the habitat through dredging or filling (including dredge spoil disposal), would result in a direct loss of valuable habitat. Such activities could have significant impacts on striped bass and sturgeon populations during spawning, and incubation periods (May-July, primarily) and overwintering times. Habitat disturbances would be most detrimental during fish spawning and nursery periods, which generally extend from April through August for most warm water species.

Thermal impacts could have adverse effects on use of the area by migratory and resident species. Activities that result in the presence of significant electric, or magnetic, or electromagnetic field may affect benthic communities, migratory fish movement, and fish egg and larval development. Entrainment and impingement causes significant mortality to all life stages of fish, including endangered species. Activities that would enhance migratory, spawning, or nursery fish habitat, particularly where an area is essential to a species' life cycle or helps to restore an historic species population would be beneficial.

HABITAT IMPAIRMENT TEST

A **habitat impairment test** must be met for any activity that is subject to consistency review under Federal and State laws, or under applicable local laws contained in an approved local waterfront revitalization program. If the proposed action is subject to consistency review, then the habitat protection policy applies, whether the proposed action is to occur within or outside the designated area.

The specific **habitat impairment test** that must be met is as follows.

> In order to protect and preserve a significant habitat, land and water uses or development shall not be undertaken if such actions would:
>
> 1. destroy the habitat; or,
>
> 2. significantly impair the viability of a habitat.

Habitat destruction is defined as the loss of fish or wildlife use through direct physical alteration, disturbance, or pollution of a designated area or through the indirect effects of these actions on a designated area. Habitat destruction may be indicated by changes in vegetation, substrate, or hydrology, or increases in runoff, erosion, sedimentation, or pollutants.

Significant impairment is defined as reduction in vital resources (e.g., food, shelter, living space) or change in environmental conditions (e.g., temperature, substrate, and salinity) beyond the tolerance range of an organism. Indicators of a significantly impaired habitat focus on ecological alterations and may include but are not limited to reduced carrying capacity, changes in community structure (food chain relationships, species diversity), reduced productivity and/or increased incidence of disease and mortality.

The *tolerance range* of an organism is not defined as the physiological range of conditions beyond which a species will not survive at all, but as the ecological range of conditions that supports the species population or has the potential to support a restored population, where practical. Either the loss of individuals through an increase in emigration or an increase in death rate indicates that the tolerance range of an organism has been exceeded. An abrupt increase in death rate may occur as an environmental factor falls beyond a tolerance limit (a range has both upper and lower limits). Many environmental factors, however, do not have a sharply defined tolerance limit, but produce increasing emigration or death rates with increasing departure from conditions that are optimal for the species. The range of parameters which should be considered in applying the habitat impairment test includes but is not limited to the following:

1. physical parameters such as living space, circulation, flushing rates, tidal amplitude, turbidity, water temperature, depth (including loss of littoral zone), morphology, substrate type, vegetation, structure, erosion and sedimentation rates;
2. biological parameters such as community structure, food chain relationships, species diversity, predator/prey relationships, population size, mortality rates, reproductive rates, meristic features, behavioral patterns and migratory patterns; and,
3. chemical parameters such as dissolved oxygen, carbon dioxide, acidity, dissolved solids, nutrients, organics, salinity, and pollutants (heavy metals, toxics and hazardous materials).

KNOWLEDGABLE CONTACTS

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Significant Coastal Fish and Wildlife Habitats

Kingston-Poughkeepsie Deepwater (In Part) part 1 of 8

Esopus Meadows (In Part)

Rondout Creek (In Part)

Vanderburg Cove and Shallows (In Part)

N

0 2000

feet

NEW YORK STATE DEPARTMENT OF STATE

Vanderburg Cove and Shallows

Esopus Meadows

Kingston- Poughkeepsie Deepwater

N

0 2000

feet

Significant Coastal Fish and Wildlife Habitats

Kingston-Poughkeepsie Deepwater (In Part) part 2 of 8

Black Creek (In Part)

Esopus Meadows (In Part)

Vanderburg Cove and Shallows (In Part)

NEW YORK STATE DEPARTMENT OF STATE

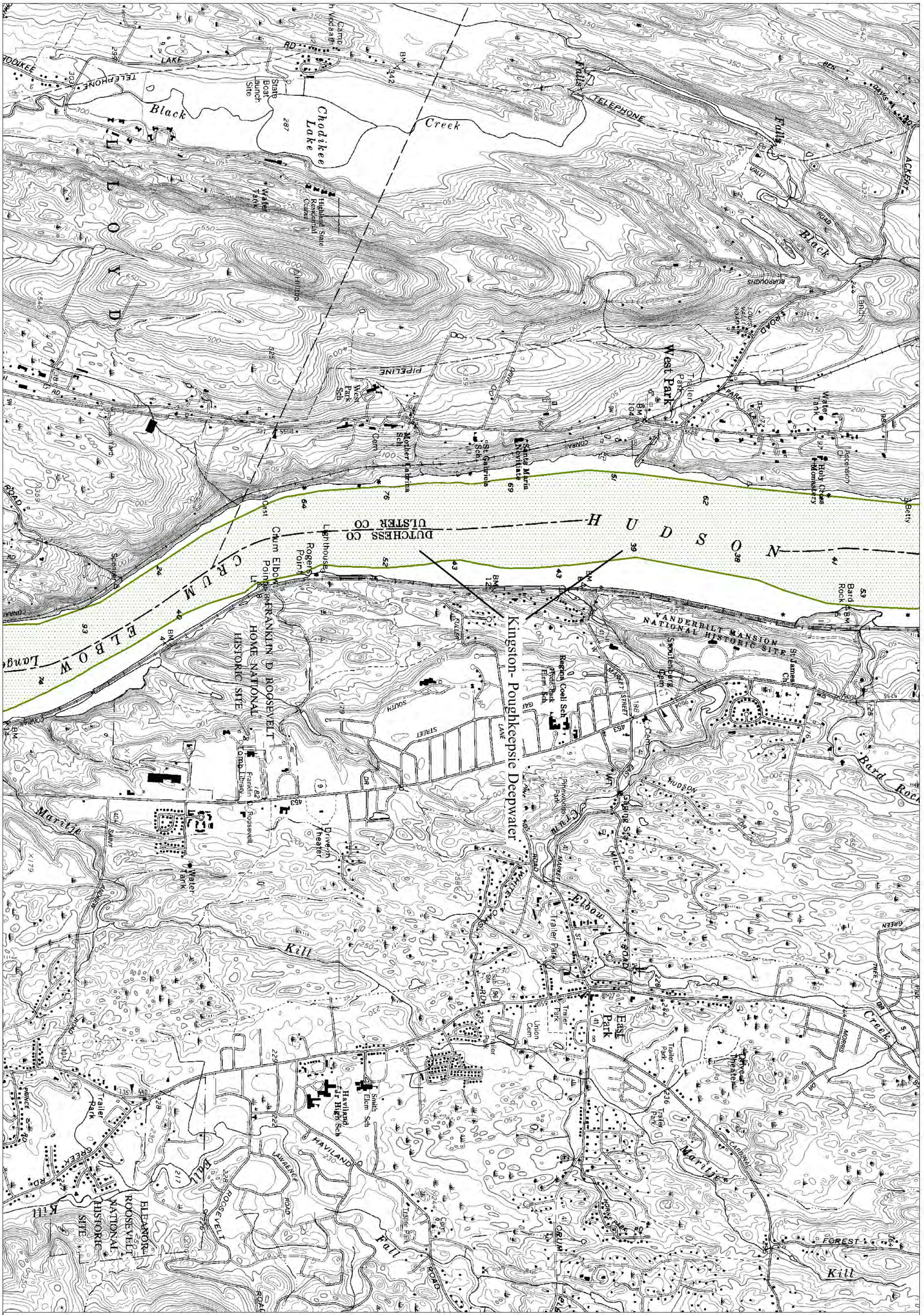
Significant Coastal Fish and Wildlife Habitats

Kingston-Poughkeepsie Deepwater (In Part) part 3 of 8
Black Creek

NEW YORK STATE DEPARTMENT OF STATE

0 2000 feet

N



Significant Coastal Fish and Wildlife Habitats

Kingston-Poughkeepsie Deepwater (In Part) part 4 of 8

NEW YORK STATE DEPARTMENT OF STATE

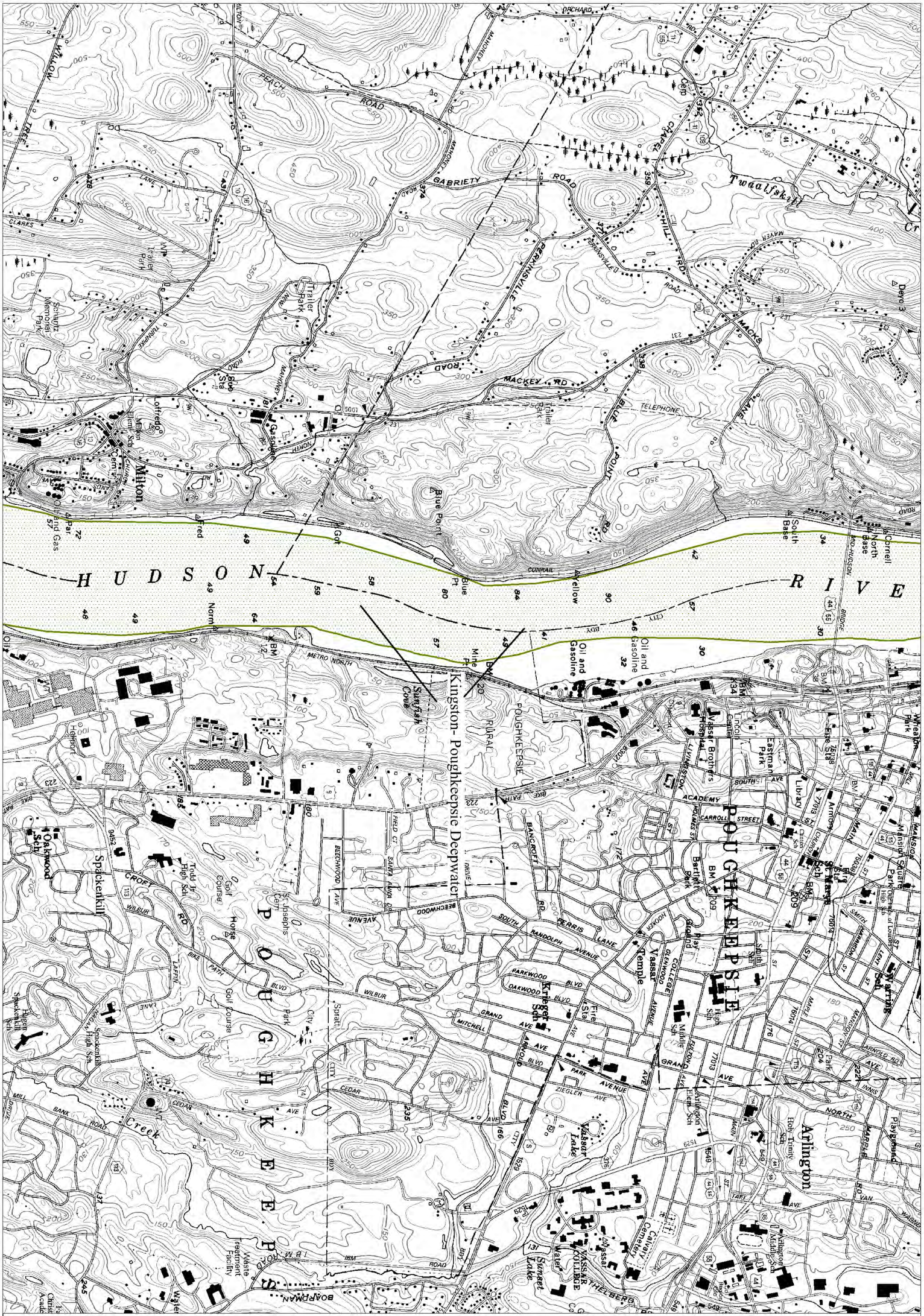
0 2000 feet

N

Significant Coastal Fish and Wildlife Habitats

Kingston-Poughkeepsie Deepwater (In Part) part 5 of 8

NEW YORK STATE DEPARTMENT OF STATE



Significant Coastal Fish and Wildlife Habitats

Kingston-Poughkeepsie Deepwater (In Part) part 6 of 8

NEW YORK STATE DEPARTMENT OF STATE

0 2000 feet

N

Significant Coastal Fish and Wildlife Habitats

Kingston-Poughkeepsie Deepwater (In Part) part 7 of 8

NEW YORK STATE DEPARTMENT OF STATE

0 2000 feet

N

Significant Coastal Fish and Wildlife Habitats

Kingston-Poughkeepsie Deepwater (In Part) part 8 of 8

Wappinger Creek

N

0 2000 feet

NEW YORK STATE DEPARTMENT OF STATE